AGRICULTURAL EXTENSION AND PRODUCTION AGRICULTURE

THE GOOD, THE BAD AND THE OPPORTUNITY

A Dissertation

by

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ABSTRACT

The purpose of this study is to understand successful and failed partnerships between industries in production agriculture and Agricultural Extension services in order to determine appropriate avenues for mutually beneficial relationships. Participants across various industries in production agriculture were surveyed in order to provide their perception of partnerships with Extension. Using phenomenology as qualitative research the results indicate a clear disconnect between production agriculture and Extension. Production agriculture industries highlight certain programs and elements within Extension that contribute to successful partnerships. However, a lack of expertise and communication by Extension personnel contribute to failed partnerships, or worse, no working relationship whatsoever. The data includes overarching concepts and meaning as to why partnerships are considered successful or not. Production agriculture is turning to other organizations for collaboration that perform similar work to Extension including non-governmental organizations. However, industries in production agriculture identify opportunities to create new or improve upon existing partnerships with Extension.

DEDICATION

My mom always wanted me to be a doctor.

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NOMENCLATURE

A&M	Agricultural and Mechanical
BQA	Beef Quality Assurance
CEO	Chief Executive Officer
LGU	Land-Grant University
N/A	Not Applicable
NGO	Non-governmental Organization
PQR	Phenomenology as Qualitative Research
TAMU	Texas A&M University
TCFA	Texas Cattle Feeders Association
U.S.	United States
USDA	United States Department of Agriculture
VP	Vice President

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CHAPTER I

INTRODUCTION: LAND GRANT INSTITUTIONS, AGRICULTURAL EDUCATION AND EXTENSION

Agriculture has developed since the beginning of man. As societies progressed so did the need for food production, as was the case in the newly developing United States. "Those who have been involved in agriculture throughout their lives often have difficulty with the realization that agriculture, as a science that could and should be studied, did not exist prior to the 19th century" (Barrick, 1989, p. 24). The U.S. had secured independence after the Revolutionary War ended in the early 1780s. As the states and territories developed so did the education system. "The use of public lands and funds for the encouragement and support of educational institutions began early in the American Colonies" (True, 1929, p. 18). Over a lengthy period of time policy was put in place to grant federal and state funding to agricultural education in the U.S. (True, 1929). However, land grant institutions and their associated Extension services were still years from being formed.

It was not until the Civil War (1861-1865) did the U.S. see far-reaching change (Geiger, 2014). The Northern part of the U.S. saw accelerated economic development, the South was devastated, and West of the Mississippi river provided new opportunities. The era "marked the transition from a predominately preindustrial to an industrialized economy" (Geiger, 2014, p. 269). "The [Civil] war is conventionally regarded as an inflection point in higher education as well, heralding the inception of characteristically

modern institutions" (Geiger, 2014, p. 269). Despite going through the bloodiest conflict in the nation's history, the "most significant breakthrough of these years, the Morrill Land Grant Act of 1862, affected higher education" (Geiger, 2014, p. 277). "On July 2, 1862, President Lincoln signed the Land Grant Act, giving each state that accepted its terms 30,000 acres of federal land" (Geiger, 2014, p.281) to establish a college

> "where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes on the several pursuits and professions in life" (Geiger, 2014, p. 281).

"At the time of [the Morrill Act] passage, agricultural and mechanical/technical workers were largely unable to attend institutions of higher education" (Martin & Hipp, 2016, p.1). "The act immediately affected expansion and structure of higher education and, eventually, the productivity of the American economy" (Geiger, 2014, p.281). Public higher education was forming in the U.S. "Land grant university colleges of agriculture emerged in an era of competing educational ideologies, which shaped these institutions in a multitude of ways" (Parr et al., 2007, p.524). Before Extension was developed additional legislation was needed.

"To understand the movement which has resulted in the broad development of agricultural education in this country it is necessary that its relation be shown to the

general development and progress of science and education and to the background of economic conditions and of organizations" related to agriculture (True, 1929, p.iii). In 1873, just over a decade after the Morrill Act passed a financial crisis set in across the country. "The great panic of 1873 was the culmination of a period of rapid expansion of agriculture, manufacturing, and railroad building" (True, 1929, p.119). "Agricultural education faced fundamental difficulties, whether offered in a university, an A&M, or an agricultural college" (Geiger, 2014, p. 302). There was discontentment amongst farmers between what agriculture departments were teaching students and practical benefits to farms (Geiger, 2014). Additionally, many rural students tended to lack preparatory education for college work (Geiger, 2014). "This situation was aggravated by the financial panic of 1873, which ushered in a long agricultural depression characterized by rising production and falling prices" (Geiger, 2014, p.302). Agricultural science was progressing, but there was a gap between practical applications and theoretical findings (Geiger, 2014). Farmers needed information and the means to disseminate it was on the horizon.

Pennsylvania State College had seen state funding for an experiment station vetoed by the governor in 1883 and 1885 and decided to seek federal support (Geiger, 2014). The Department of Agriculture, in 1885, came under the new leadership of Norman Coleman of Missouri. Mr. Coleman was fond of agricultural education and research (True, 1929). Mr. Coleman called for a convention of "'representatives of the different agricultural colleges and allied State institutions' to consider cooperation with the department in the work of experiment stations" and congressional support (True,

1929, p.206). From this meeting came an experiment station bill and a committee was assembled to pursue support (True, 1929). The committee worked with Commissioner Coleman and secured "the interest of [U.S. Representative] William H. Hatch, of Missouri" (True, 1929, p.208). Mobilized land grant colleges rallied in support of this bill and the Hatch Act passed and became law in 1887 (Geiger, 2014). The legislation was only an authorization by Congress but did not have any appropriations (True, 1929). The initial appropriation was made the following year in 1888 and "at that time a precedent was established; which has since been followed, of including this fund in the annual appropriation act for the Department of Agriculture" (True, 1929, p.210). "The Hatch Act not only funded but also legitimized agricultural research as a core function of land grant colleges" (Geiger, 2014, p.304). However, it also "reenergized agricultural critics of the colleges were incensed that additional funds were directed to institutions that, in their view, neglected farming and farmers" (Geiger, 2014, p.304).

Land grant faculties and experiment stations were not maximizing their potential to reach farmers. "As the faculties and student bodies in the agricultural divisions of the land-grant institutions grew and the variety of duties of these institutions increased, the necessity of a more complex organization became apparent" (True, 1929, p.220). The concept of Extension was developing and in some cases was already in use. As universities expanded they began to break up into different colleges and then departments. "When the agricultural experiment stations were organized, under the Hatch Act of 1887, they became distinct departments of the college or university as the Federal law required" (True, 1929, p.221). Needed funding was going to the experiment

stations but work was conflicting, which "was not a very satisfactory arrangement, since the station and teaching division of the college needed to have close and well-correlated relations" (True, 1929, p.222). From this need the "growth of the extension work of the colleges brought about the employment of technically trained persons and clerks who gave their whole time to this work" and many "college and station officers and other employees also engaged in this work part of the time" (True, 1929, p.222). "In 1908, President Theodore Roosevelt appointed a Commission on Country Life to 'make rural civilization as effective and satisfying as other civilization'" (Wang, 2014, p.1). By 1911 the concept of a county extension agent was spreading rapidly across the U.S. (Rogers 1988). "Based on [Roosevelt's] Commission's recommendations of a nationalized extension service, and built upon the pre-established LGU system, in 1914, the Smith-Leaver Act created a unique U.S. agricultural Cooperative Extension System (Extension)" (Wang, 2014, p.1). Initially Extension employees were tied to specific departments such as animal husbandry, horticulture or dairy (True, 1929). However, due to the complexity of their travel, additional responsibilities and extension related work it was evident a central authority was needed.

> "When it became evident that a Federal law would be enacted under which large grants of money from different sources would be given to the colleges for the maintenance of a broad system of extension work, thus making such work a large and permanent function of the land grant colleges, the organization of this work was actively discussed" (True, 1929, p.222).

Ultimately a "proposition that the whole agricultural work of a land-grant institution should be administered by a dean, under whom there should be directors of research, resident teaching, and extension work, respectively" was concluded (True, 1929, p.222). In 1912 the director of the Office of Experiment stations stated that land grant institutions had three areas of focus; research, resident teaching and extension. In 1914 the Department of Agriculture announced a differentiation between Extension, research and regulatory work in order to modify and meet organizational needs due to their expansion of activities (True, 1929). In 1914, the Smith-Lever Act passed and Cooperative Extension Services, associated with their land-grant institutions, were established to provide practical information to end users related to agriculture, home economics, policy, economic development and youth programs such as 4-H. Federal and state financing was appropriated specifically for Extension. From the early 1900s to the Smith-Lever Act in 1914 colleges of agriculture were "developing various forms of extension work, and together with the National and State Departments of Agriculture were laying the foundations for an unparalleled system of practical education in agriculture and home economics which was to reach great multitudes of the farming people and profoundly affect the development of a better agriculture and country life" in the U.S. (True, 1929, p.275-6).

"Agriculture extension services are one of the most common forms of public-sector support of knowledge diffusion. Effective Agricultural Extension can bridge the gap between discoveries in the laboratory and changes in the individual farmer's fields" (Birkhaeuser, Evenson & Feder, 1991, p.608). "The goals of agricultural extension

including transferring information from the global knowledge base and from local research to farmers, enabling them to clarify their own goals and possibilities, educating them on how to make better decisions and stimulating desirable agricultural development" (Anderson, 2004, p.41). "Agricultural extension services not only convey information from research centers to farmers but also can ease a reverse flow of information." (Birkhaeuser, Evenson & Feder, 1991, p.608). In many places "extension services function as a farmer organization, expressing farmer concerns to the public agencies designed to serve farmers" (Birkhaeuser, Evenson & Feder, 1991, p.608).

"The U.S. agricultural extension model is undoubtedly the most widely recognized system in the world for the diffusion of technological innovations. No other government agency claims to be relatively more successful in transferring technology" (Rogers, 1988, p.493). However, extension is not free from criticism. "Some criticisms have been directed at extension services' elite bias, its continued emphasis upon agricultural production in the face of farm surpluses and the current farm crisis and a decreasing farm population in the United States, and its close association with the American Farm Bureau Federation" (Rogers, 1988, p.504). In reference to an innovation to breed "new tomato varieties to facilitate machine picking, an innovation of particular advantage to large-scale tomato farmers" author James Hightower wrote "much of the tax-supported agricultural research at state agricultural universities is designed to serve the needs of agribusiness corporations and the largest commercial farms, while small farmers are disadvantaged" (Rogers, 1988, p.504). Yet, "[b]y accelerating the diffusion proves of improved technology, extension can bring about a

faster growth of yields and rural incomes than would occur in the absence of extension" (Birkhaeuser, Evenson & Feder, 1991, p.608).

"Since it was first established 100 years ago, extension has played critical roles in various time periods, including World War I, the Great Depression, and World War II. It helps to secure national food and fiber needs through education, marketing, and organization" (Wang, 2014, p.1). Extension has also helped the "USDA implement its main objectives in developing the rural economy, training tomorrow's leaders, disseminating knowledge, and pursuing sustainable agriculture and environment since WWII" (Wang, 2014, p.1).

Extension, through the years, has interacted with citizens and industries in production agriculture in various ways. Extension has continued to evolve over many years to meet the needs of those in production agriculture. However, Extension may have less reach and impact than it did decades ago. Industries in production agriculture may not value Extension as a partner as they once did. My research seeks to understand and learn from partnerships between Extension and production agriculture in order to determine if they were considered successes or failures.

CHAPTER II

CONCEPTUAL FRAMEWORK: PUBLIC AND PRIVATE PARTNERSHIPS

Extension Funding Sources

"Agricultural extension programs are intended to hasten adoption of improved practices and technologies through providing users with validated information and nonformal education" (Bennett, 1996, p.4). Funding for Extension services, in the United States, comes from state and federal appropriations. There are fees for services within Extension however it is a miniscule amount in comparison to the total budget. Public universities have seen dramatic decreases in state and federal funding since the 1970s while tuition has increased significantly in that same time (Dynarski & Scott-Clayton, 2013). Private funding for education at public universities has also increased significantly. Universities turned to organizations outside of academia to develop partnerships (Slaughter & Rhodes, 2010). While Extension agencies are tied to land-grant institutions they do not receive funding from student tuition. "The current and growing importance of for-profit extension in agriculturally developed societies demonstrates the profitability of selling agricultural information, expertise and management assistance" (Bennet, 1996, p.5). Extension competes with for-profit corporations for services and expertise. However, these organizations can also be a source of funding when aligned as partners. Extension, a public service, seeks private partnerships from outside organizations such as corporations. These partnerships can create implications beyond Extension and an associated corporation. Ultimately, I want to know if partnerships between Extension and corporations are successful.

"The significant reduction in public research and education resources, along with an increase in competition in higher education sector, have forced universities to obtain additional resources from their most valuable asset their researchers' expertise" (Alvarez-Suescun &Vera-Salazar, 2014,p.2). Extension, tied to a land-grant university, is no exception to this premise and relies on personnel to develop resources. "From an academic point of view, university-industry cooperation (UIC) is a field of research that has been continually growing over the last twenty years, as the increasing number of publications released on this topic" (Alvarez-Suescun & Vera-Salazar, 2014, p.2). Land-grant universities are vast institutions with multiple colleges, departments and agencies therefore segmenting these UIC partnerships can be a challenge. "However, as Vera (2010) noted, most of the literature have focused on firm-related factors, and, to a lesser extent, on the cooperation process itself. Among those studies that aimed to explain why some universities are better in these activities prevail those that take the researchers as the unit of analysis" (Alvarez-Suescun & Vera-Salazar, 2014, p.2). In addition, "research has mainly focused on the effect of these determinants on the volume and variety of collaborative agreements rather than on the success of the partnership" (Alvarez-Suescun & Vera-Salazar, 2014, p.2). It is important to understand Extension's role with industry partnerships in terms of success or failure.

"Public funding may be justified for extension programs that provide specified public benefits through influencing widespread adoption of specifically identified agricultural practices and technologies" (Bennet, 1996, p.8). However, the question remains as to what is deemed successful or unsuccessful by the involved parties? Suppose an organization funds an Extension project that determines their product to be inferior. This could have implications for all future

parties involved. Conversely a project may be beneficial to a corporate partner, but what does that mean for Extension?

A History of Extension Work

"Agricultural extension programs may foster adoption of improved practices and technologies in a more economical, politically acceptable manner than publicly funded programs facilitating adoption through direct financial incentives, technical services and/or regulations" (Bennet, 1996, p.8). Organizations benefit from working with Extension for multiple reasons such as regulatory issues, product testing and technology adoption. The partnership between corporations and Extension is decades old. However the question remains as how these are deemed successful or not. Do outside stakeholders see value in financially supporting Extension work? Are there any dilemmas for Extension, and the university, in accepting funding for specific research projects or programs?

Rooted in agriculture, Extension's role has expanded dramatically in recent decades. From "rural youth to a new focus on education undergraduate and graduates students to empower community members to create change" to working with Health and Human Services, and economic development to conservation (Velez, Moore, Bruce & Stephens, 2014, p.65). New corporations collaborating with Extension may be unfamiliar with possibilities and restrictions. Through these developing opportunities and bringing together different organizations and agencies "collaboration among different professions remains sluggish and spotty" (Majee, Maltsberger, Johnson & Adams, 2014, p.90).

Extension's budget is limited to state and federal funding. In order to secure more funding there is a need to identify alternative sources. Natural partners for Extension to pursue

are related agricultural corporate organizations with resources available for project support. Extension can therefore explore innovations and trailability in order to benefit the public that could in turn benefit the supporting corporation. Extension can provide evidence of public value should any organization want examples. Historically land-grant universities can reach back and show services delivered, social outcomes were achieved and universities as an agency maintained trust and legitimacy (Talbot, 2008). These are measured performance aspects critical to public agencies (Talbot, 2008).

> "Trust and legitimacy in public agencies and their activities serves several positive functions – it encourages at the very least compliance at its best active cooperation and 'co-production' between individual corporate citizens and state agencies. It legitimizes the raising of public funds to carry out collective action projects that the market would not provide (Talbot, 2008, p. 4)

Land-grant universities and Extension serve a role to benefit society through technology diffusion. By successfully testing a new concept it increases the odds of being adopted within Extension which can therefore benefit production agriculture (Rogers, 2003). Allowing programs to be tested can serve Extension well. Equally important to those programs is equipping new employees with tools to succeed. Are corporations able to therefore benefit by capitalizing on Extension's services?

Extension provides a valuable public service. Corporations have resources to both support and benefit from Extension. As Extension works with outside organizations the question remains as to what is deemed a success or failure for both parties involved.

CHAPTER III

METHOD: QUALITATIVE STUDY

Aim of Study

The purpose of this study is to understand production agriculture successes and failures related to partnerships with Extension to determine appropriate avenues for mutually beneficial relationships. Having identified the purpose of my study the next step is to identify the problem (Merriam, 2009).

Nature of the Problem

The nature of the problem is identifying what is considered successful and failed partnerships between production agriculture and Extension.

Qualitative Research Approach

Basic research, while extremely useful, is intended to understand something. Applied research is aimed at improving something in particular (Merriam, 2009). "Life does not come to us like a math problem, but more like a story. There is a setting or context, there are characters or respondents, and there is a conflict or a problem to address" (Dooley, 2007, p.33). My goal is to understand production agriculture successes and failures related to partnerships with Extension to determine appropriate avenues for mutually beneficial relationships. Qualitatively, I sought to identify what production agricultural organizations, including commodity groups, consider as a successful or failed partnership with Extension.

Universities were developed for teaching and research, with agriculture as the basis for many universities (Herren & Hillison, 1996). Extension was born out of land grant universities in the United States as the means to put research into the hands of end users (Herren & Hillison, 1996). Now with large agricultural industries, producers, public and private agricultural research

and consumers with questions, the lines are blurred as to who is serving whom. Therefore certain questions need to be addressed. What are the production agriculture successes and failures related to partnerships with Extension?

In order to provide relatable context my approach shares "a common emphasis on the analysis of constructions of meaning, of the ways people make sense of their everyday activities and surroundings" (Dooley, 2007, p.34). For the last century Extension has collaborated with industry partners. This is unlikely to end anytime soon, however, is the partnership being evaluated for all parties involved? Is Extension missing opportunities with production agriculture corporations? Asking questions directly to those in corporations provides an opportunity for open ended answers in order understand "the meaning people have constructed" (Dooley, 2007,p.34). Collecting data qualitatively will allow for interpretation and understanding. The data provides useful information for Extension and agricultural corporations to identify successful partnerships and avoid failures.

"Somebody's judgement of the effectiveness of quality management is performed but is also linked to his conceptions of quality of education" (Kleijnen et al., 2014, p.104). The conception may vary depending on the stakeholders own interests and priorities (Kleijnen et al., 2014). "According to literature, these conceptions of quality and the judgements of effectiveness of quality management are embedded in the culture of an institution and especially in its organisational values" (Kleijnen et al., 2014, p.104). In other words, someone's perception of Extension and the associated land-grant university will depend on their own interests and opinions of that institution's values. Therefore understanding production agriculture partner's perceptions of Extension is an element to consider qualitatively.

My preliminary research consisted of literature reviews on the subject of land grant universities, Extension and the production agriculture industry. Literature reviews were helpful in developing my conceptual framework (Merriam, 2009). The goal is learn and understand from those with knowledge and experience. I went directly to the sources, those who work in production agriculture. (Fraenkel, Wallen, & Hyun, 2012).

Phenomenology as qualitative research (PQR) was utilized as my research approach (Paley, 2017). Qualitatively there were common themes in the data. However, there was meaning to the phenomenon in the data (Paley, 2017). The responses were not rooted in statistical analysis rather they are based on experiences. The participants had a familiarity with Extension as I have a familiarity with their organizations. Phenomenology as qualitative research often turns "out to be hybrids, grafting the discourse of meaning attribution on to common themes" (Paley, 2017, p.39). Therefore identifying the common themes and meaning attribution lent itself to PQR.

"We take an experience from our own life or the literature that might be similar to a phenomenon that we are studying and start thinking about it in terms of its properties and dimensions" (Corbin & Strauss, 2008, p.76). It is not necessarily the specifics cited in the responses but the relevant concepts and understanding that I derive from given my experience in Extension and collaborating with external organizations (Corbin & Strauss, 2008). Examining feedback from outside of Extension gives me "ideas of what to look for in the data" (Corbin and Strauss, 2008, p.76).

Participants

To gain perspective as to how agricultural organizations partner with Extension I surveyed employees within production agriculture. My focus was on quality participants not the

quantity of participants. The objective was to determine what worked and was deemed successful and what failed and was deemed unsuccessful. In order to interpret corporate feedback the survey provided a holistic view of Extension (Dooley, 2007). Building the conceptual framework qualitatively allowed for a heuristic approach. "Heuristic research 'refers to a process of internal search through which one discovers the nature and meaning of experience and develops methods and procedures for investigation and analysis'." (Dooley, 2007, p.33).

The participants are individuals working in production agriculture such as corporations like Cactus Feeders, Friona Industries, Attebury Grain, Capital Farm Credit and others who were willing to participate. I was familiar with some of these organizations and was able to use my existing network to connect with organizations I did not know well or did not have a personal contact. This allowed me to survey those I did not already know. This allowed me to get a range of corporations from the agriculture industry. There was neither emphasis nor discrimination of participants based on age, race, ethnicity or gender.

Codes were assigned to the participants. The participants are individuals but represent their organizations. It is highly likely personnel will change over the years less often than the organization will cease to exist. Commodity groups were assigned codes C1-6, feed yard operators were assigned F1 and F2, Ag lenders are AL1 and AL2, an animal health organization is AH, a grain organization is G1, a feed yard and dairy organization is FD and a cow calf and feed yard ranch is R1.

Data Collection Tools

Creating effective questions is critical to a qualitative survey. My survey included open ended questions but I also kept response rate and time consumption in mind to ensure the respondent completes the entire survey (Dillman, Smyth, & Christian, 2014). The survey leaves

the door open to future data collection. I offered to conduct a follow up interview with one participant, but was not taken up on the offer. I have first-hand experience dealing with partnerships between Extension and production agriculture. For over a decade I have worked with outside organizations to fund university program areas including those in Extension. I spent hours upon hours listening to individuals, who represented their organization, share their opinions on how the university, a department, a program or an employee should be doing things in order to help their organization. In this experience I learned that the individual simply wanted their frustration to be heard. However, they were often presenting solutions in this venting process. By providing solutions it was valuable when I returned to campus to discuss opportunities for partnerships with these organizations. I formulated my questions in hopes of giving participants the very same opportunity I experienced, the opportunity to vent and provide solutions. I wanted to gain perspective from the organization's point of view regarding their experiences with Extension.

I read Dr. Umali-Deininger's 1997 article "Public and private Agricultural Extension: Partners or rivals?" and learned more about Extension's public value as well as competition from other organizations. Discussed in depth was the opportunity and challenge to prove Extension's worth to those it aims to serve. The article also presented threats to Extension programs from other organizations that provide similar services. These questions were based off of my internal knowledge of Extension, Dr. Umali-Deininger's article and other similar articles. As the researcher it is important to understand the interviewee's perspective, I want to know why they feel the way they do (Fraenkel, Wallen, & Hyun, 2012). Many articles I read were from the perspective of Extension, focused on internal reviews. It was difficult to find articles that were from an outside perspective such as those who work with and not for Extension. I want to

understand how external organizations in production agriculture view their partnership with Extension.

Survey questions included job title, job responsibilities and role in production agriculture. Questions included;

> Does your organization collaborate with colleges/universities on agricultural projects? *Collaboration could include research, testing, program support, financial support, etc.
>
> Consider a university you have collaborated with the most, what is your overall perception of that university?
>
> Does your organization collaborate with Extension services? (Including 1890 and 1994 institutions)
>
> Please describe ways your organization collaborates with Extension? *If you're unsure write "Unsure."
>
> Please describe the successes and/or failures: *If your organization does not currently partner with Extension but did in the past please describe successes and/or failures. If your organization has never partnered with Extension write "N/A".
>
> What steps should universities and/or Extension take to start or improve collaboration with your organization?
>
> Does your organization collaborate with other non-governmental organizations (NGOs)? *Examples: The Nature Conservancy, World Wildlife Fund, National Cattlemen's Beef Association, National Association of Wheat Growers, etc.
>
> How does your organization hold partners, such as universities or other NGOs, accountable?

Procedures

My IRB, IRB2018-0129, was approved to interview participants. I sent an introduction email to potential participants. With the introduction email a link to a Qualtrics survey was included.

Data Analysis

In digging into the surveys I formed my question while conducting the research. Data analysis happened throughout the entire data collection process (Merriam, 2009). "The greatest tools researches have to work with are their minds and intuition" (Corbin & Strauss, 2008, p.160). Analyzing the qualitative data required breaking down all of the learned information and synthesizing it into coherent and digestible pieces (Fraenkel, Wallen, & Hyun, 2012). Common themes arose from repeated or similar statements made by participants. Qualitative data undeniably uses some concepts of quantitative data (Paley, 2017). While I recognized repeated information in the data I did not utilize precise quantitative measurement such as a specific number or percentage. My analysis was PQR focused, I wanted the participants opinion in order to learn what they considered a success or failure. Opinions and perceptions were similar in the data yet came from different individuals in different sectors of production agriculture. From the varied data I made generalizations based on the reoccurring, or common, themes (Paley, 2017). In the broadest of senses common themes are statistical (Paley, 2017). However, meaning attribution is not statistical in any sense (Paley, 2017).

As the researcher I looked to identify the meaning attribution of the phenomenon (Paley, 2017). Not all of the data fit neatly into categories or themes instead I had to understand the overarching meaning. I was able to draw on my experiences with Extension and industry partnerships to use PQR for analysis. "Instead of high-frequency categories being identified as common themes, there is now an overall meaning that can be attributed to the phenomenon under investigation, and that is revealed when all the individual items are assembled" (Paley, 2017, p.29). The common themes helped me identify sections of information. Collectively the data provided a broader picture which told an entire story. The common themes are like chapters of a

book, the meaning attribution is the whole book. PQR is a "form of qualitative research that focuses on experience, and that engages in meaning attribution" (Paley, 2017, p.30). The data contains experiences between production agriculture industries and Extension. I evaluated those experiences and sought to understand the meaning of the phenomenon.

Included in the data were specific details and narrowed details. These were helpful in developing common themes, however, I did not want to miss the overall meaning. It is important to focus on the concepts, not just the details (Corbin & Strauss, 2008). I read and re-read the data and took time to carefully consider what the participant said. When specific examples of successes or failures were listed I continued to search the data as to *why* they were successful or not. There is no shortcut to doing qualitative research (Corbin & Strauss, 2008). Analyzing was not as simple as reading one data set and assuming I answered the question. Each participant was telling their own story for consideration.

Bias is covered at the end of this chapter. Yet here I add a note of caution to my own research in identifying the "precis" or "summary statement that expresses something profound and non-obvious about the experience concerned" (Paley, 2017, p.31). The meaning attribution was not profound to me, it almost seemed obvious, and is likely due to my own experiences. To someone else or Extension personnel, however, my conclusion may be very profound. The data points out very real problems and I fear Extension personnel are unaware of how production agriculture industries view them.

Until the data was analyzed during and after collection and despite my personal experiences I did not have a conclusion prior to reviewing all of the data. However, I work for Extension and had some first-hand experience as to goings on internally and external relationships. The goal was to identify successful and failed partnerships between industry and

Extension. The terms partnership and collaboration are used interchangeably throughout my dissertation because I did not want to limit what both industry and Extension define as working together. Any consideration of a partnership or collaboration should be considered for the use of this research. The conclusion developed into an informative piece to all parties involved. In the survey it is stated that the information will be shared with those who participate. While the study will also be made available to anyone interested those who participate have a vested interest. Not only is it an opportunity for them to discuss highlights and lowlights it should provide useful information on existing and potential partnerships.

Going directly to the sources of interest is a strength in a qualitative study. Reaching beyond Extension, which is only half of the partnership, and into production agriculture, the second half of the partnership, will lend credibility to the study (Merriam, 2009). Direct quotes and real-world examples provide valid information. The study is also transferable to all parties involved due to the validity of the participants and substantive data. Peer to peer evaluation is useful to both Extension and production agriculture. By serving as a medium to collect and share information it benefits those who are looking to sustain success or develop new connections.

There are successful and opportunistic examples of Extension and the agricultural industry working together for the betterment of society. Extension has contributed to production agriculture through economic development, improved crop yield, sustainable land management practices, pest management, technology transfer and more. In the past there are also cases of failures in those partnerships. My goal is to identify and understand the reasons for the good and the bad. Through thoughtful and meaningful data collection the information was analyzed and

interpreted. A conclusive study will serve as a valuable tool for existing and future collaboration between Extension and production agriculture.

Bias

I work for Texas A&M AgriLife Extension. My professional experiences influenced my decision to research this topic. I have seen both good and bad experiences between Extension and the production agriculture industry. "When we share a common culture with our research participants, and sometimes even if we don't share the same culture, we, as researchers, often have life experiences that are similar to those of our participants" (Corbin & Strauss, 2008, p.80). My experience and understanding of external collaborations could have lead toward biased interpretation. However, my desire was only to understand what went both well and poorly in order to learn from those experiences. I did not impose my own experience on the data, rather I used my experiences to explore the possibilities of meaning (Corbin & Strauss, 2008). "Our experience may even offer a negative case, or something new to think about that will make us confront our assumptions about specific data" (Corbin & Strauss, 2008, p.80).

CHAPTER IV

FINDINGS

Background

Given Extension's long and winding road to develop as it is known today it is worth asking about its relevance as a resource to production agriculture. I asked for industries in production agriculture to provide feedback about their partnerships with Extension. The goal is to understand successful and failed partnerships between Extension and production agriculture industry. From the research I can better understand mutually beneficial relationships for Extension and production agriculture.

Extension has been working with production agriculture for more than a century (Anderson, 2004). Through decades both Extension and production agriculture have evolved and changed to meet growing needs. In order to understand the partnerships between Extension and production agriculture, I surveyed fifteen individuals from various production agricultural sectors. The goal is to identify what production agriculture perceives as strengths and weaknesses with their Extension partnerships.

The evolution of Extension took decades to develop (Geiger, 2014). There was a steady goal, however, to disseminate research to agricultural producers. Through educational programming, for individuals and organizations, Extension can increase the speed and rate of early adoption to new and innovative technologies in agriculture. Extension grew over a century and its role continued to evolve (Wang, 2014). Individuals and organizations alike learned from and worked with Extension. Now, the question remains as to what is considered successful and what is a failure in partnerships with those in production agriculture. Perhaps Extension is losing a connection of who to serve or how to serve? Perhaps the different types of production

agriculture no longer value Extension as they once did? My research dives into the good and the bad in order to identify opportunities for Extension's partnerships with production agriculture.

The Participants

The participants who completed the qualitative survey are executives from various agricultural industries. While all of these participants operate in Texas some have operations outside of Texas, which was reflective of their university and non-government organization partners outside of the state. A qualitative survey allows the participants to be reflective and provide insight into their answers (Merriam, 2009). However, these are very busy individuals and the survey was designed to be sensitive to the demands on their time. Of the fifteen total participants there were four executive vice presidents, three CEOs, two presidents, two executive directors, two managers, one chairman and one director of marketing and communication. Industries represented include beef cattle and feed yards, animal health, grain, agriculture lending and finance, and multiple commodity groups representing pork, beef, dairy, corn, wheat and cotton.

Perception

The survey asked respondents "Consider an/the Extension service you have collaborated with the most, what is your overall perception of that organization?" One statement seemed to encapsulate the positive sentiments toward Extension, "Great people stretched pretty thin."(F1) Similar to the previous statement but coming from a communication and marketing background, "Good people doing good work, but could be better coordinated from a strategic direction and coordination perspective."(AL1) The commodity groups in Texas had mostly consistent sentiments, as one said "There are many strong groups/individuals within Extension and the universities. There are many that could be more active as well."(C5) Another stated "I have a

very high regard for AgriLife Extension program and personnel."(C3) Another added "Very professional, well-educated and always willing to help."(C1) Another commodity group added "Texas A&M AgriLife Extension service is who we have collaborated with the most. Our perception is Extension is doing an excellent job."(C6) Paired with other commodity groups "It is a very valued relationship."(C4) and "AgriLife is who we work with the most, we need more open communication in the system, some personnel are very good while others are not."

However, the tone changes outside of the commodity groups "We don't collaborate anymore as there is no benefit in doing so."(R1) While the commodity groups share an archetypal theme of support for what is clearly a long standing partner, a stand-alone operation has a very different tone. This different tone continues "Helpful and well intentioned, but NOT generally recognized as a resource capable of adding value for the most sophisticated producers."(AL2)

Industry within production agriculture has mixed perceptions of Extension. A CEO stated that his "collaboration has been in a prior career. We had a very close tie to the leader of one of the areas and that created very open dialog on areas where industry and academia could work together to enhance returns for a broader industry."(F2) An industry president simply referred to Extension as thought leaders and change agents, but offered no further detail.(AH) Another industry president had no answer to the question. Providing insight into how industry views Extension and their interaction with producers, a manager stated "We have a good relationship with them. We collaborate well to assist producers. We gain good agronomic and marketing info from the organization."(G1)

Commodity groups were positive on their perception of Extension across the board. There was some subtle criticism in their feedback but it was limited. A single operation, though

large, was very critical pointing out there is no need to work with Extension any longer. Industry had less feedback to provide perhaps due to a lack of interaction as noted by one CEO. Commodity groups were targeted as they represent a large swath of individuals. The operation that was critical of Extension partners with one of the commodity groups. It is possible that the commodity groups have single individuals that may also be critical of Extension. Based on the commodity groups view of Extension being positive, overall, there is an indication that the majority of individual organizations would have a positive perception of Extension as well. The other industries seem to have a genuine disconnect with Extension.

Collaborators

While all of the respondents and their associated organizations operate in the state of Texas, most of them collaborate with multiple universities in and out of the state. The survey asks "Does your organization collaborate with colleges/universities on agricultural projects?" and "Which universities does your organization collaborate with?" The universities listed within the Texas A&M University System include Texas A&M University, West Texas A&M University, Tarleton State University, Prairie View A&M University, Texas A&M University – Kingsville and Texas A&M University – Corpus Christi. Outside of the Texas A&M System but in the state are Texas Tech University, Sam Houston State University, Angelo State University, and the University of Texas Medical Branch – Galveston. Collaborations with universities outside of Texas listed are Oklahoma State University, Kansas State University, University of Nebraska – Lincoln, Colorado State University, New Mexico State University, University of Kentucky, Cornell University, University of Arizona, Louisiana State University, University of Georgia, and North Carolina State University. Many of these universities are land grant

institutions and therefore have Extension as part of their university. However, some of these are not land grants and do not have Extension.

Respondents also listed the non-governmental organizations with which their organization collaborates with as the survey asks "Does your organization collaborate with other non-governmental organizations (NGOs)?" and if so to list them. The list included National Cattleman's Beef Association, Texas Southwestern Cattle Raisers Association, Texas Beef Council, Blackland Prairie Raptor Center, Kansas Livestock Association, National Pork Board, National Pork Producers Council, Texas Cattle Feeders Association, National Corn Growers Association, Texas Wildlife Association, Texas Deer Association, Coastal Conservation Association, Latinos in Agriculture, National Ranching Heritage Center, Texas Realtors Land Institute, The Nature Conservancy, World Wildlife Fund, National Cotton Council, National Association of Wheat Growers, Wheat Foods Council, The Home Baking Association, Cattlemen's Beef Board, and U.S. Meat Export Federation.

The broad range in NGO and university partners illustrate a wide range of possible agriculture related partnerships and projects. The opportunities go beyond production agriculture as well when considering partners such as The Nature Conservancy, World Wildlife Fund, Texas Realtors Land Institute and other similar organizations. Extension offers programs and partnerships related to wildlife management, real estate and conservation. Extension may be missing opportunities for partnerships however there could be justifiable reasons that production agriculture is looking for different partnerships. Considering several industries had a limited, or negative, perception of Extension this could explain why they chose to partner with organizations that provide similar work to Extension.

Successes and Failures

After asking about collaborating with Extension participants were asked to "Please describe the successes and/or failures" of these endeavors.

Failures

"Many years ago the Ag Extension service lost its Ag[ricultural] focus. We now have uninformed, untrained, uneducated agents in our counties who are clueless about Ag[riculture] and provide no benefit to the farmers and ranchers. I have no knowledge of the research coming out of our local experiment station and what little they are doing is never published. We see over and over the same old cattle demonstrations and feed trials that serve little purpose to those in the business for a living. It's a shame I can't call on my local agents and expect highly trained knowledgeable help."(R1)

"Workshops and seminars have been positive. The new Path to Plate program is positive; our organization has worked with it several times. Youth interaction has been high. We have worked with [Texas] Tech [University] and W[est] T[exas A&M University] more in recent years. The biggest failure would be the absence of a state swine extension specialist. Our association feels that the current situation is extremely disappointing; in no way should an industry / entire species not be represented in Extension. It has left a void in our industry."(C5)

Successes

"Field demonstrations for growers where third party verification show products or practices that work or don't work. Youth education activities."(C2)

“Allows to have small pen studies completed to define a specific goals on a scientific basis. The answers from the small study allows for determination if we will do larger commercial studies. Meat Science does an excellent job of doing projects for our organization that have helped us improve animal performance. (verification).”(F2)

“Ranch Management University at Texas A&M has been a success in that each year we present our financial education course, we get greater participation from the attendees.”(AL1)

“Basic research, development of new technologies, development and testing of models.”(AH)

“The collaboration allows us to gain agronomic and market knowledge to help Attebury, as well as our producer customers succeed. The field trials on grain varieties (and other research) are very valuable to our producer customers. The informational meetings allow collaboration between the producer and the marketplace when issues like high fumonisin in corn arise.”(G1)

“From the producer side, the results we're achieving through the BQA program and the improvement we are making it providing a more consistent product to consumers. This effort is evaluated every 5 years nationally, and we have seen continuous improvement. The Beef 706 program give producers the opportunity to follow a calf through the production sector and helps them better understand the impact of management and handling to the end product. Producer[s] are understanding that everything we do at the production level can have a positive or negative effect on beef.”(C1)

“The beef cattle specialist has been very responsive to industry needs. Working with TCFA he has been an integral part of designing, implementing and auditing the enhanced BQA program.”(F1)

“Funding for extension demonstration plots for cotton specialist and support of county agents doing work in cotton.”(C4)

“Success in creating awareness about Farm Credit; who we are, who we serve and our mission. Relationships with university students have led to a more successful internship program. New employees have been hired because of collaboration with universities.”(AL2)

“The Texas A&M AgriLife Extension Service has been very successful in educating our producers by providing various extension research and educational programs, as well as the extension research projects that Texas Wheat Producers has funded.”(C6)

Fortunately, it is rather clear as to what is deemed a success and what is deemed a failure based on respondent answers. From evaluating perception of Extension to the clear indicators, most of the participants had successful experiences with Extension. Some provided specific examples while others provided overarching themes.

In multiple occasions the participants mentioned universities, which can blur the lines as to identifying if Extension or the associated university deserves credit. The participants, as the research asks, indicated that their partnerships were either somewhat or very successful. Not one

response indicated it was unsuccessful. Moving from perception to examples of successes and failures, it is important to consider the accountability and interaction with Extension.

Interaction and Accountability

Respondents were asked to describe ways their organization collaborates with Extension. Additionally, they were asked to define how their organization holds their partners, such as Extension, universities or NGO's accountable; low – little to no accountability, moderate – accountability varies by project or partner, or high – such as mutually agreed upon metrics or pre-planned goals. Noting low accountability, "We try to serve as a resource to Extension, when or if needed, in any we can. More recently, that has consisted of providing information, giving presentations to various groups - either to Extension personnel or through activities organized by Extension."(C5) This group's efforts are to be a resource for Extension, not the other way around.

"Through our AgriLife dairy specialist and with various county agents across the state."(C3) with moderate accountability. "County, district and regional programs for producers and consumers"(C2) with moderate accountability. "We have and are working on feeding trials"(F2) with moderate accountability. Indicated though not clearly defined it appears these groups have two way communications with Extension. The research would indicate that industry partners find value in their interactions with Extension. Similarly other organizations appear to fit into this same theme of interaction (AH). Continuing on are more detailed examples of how those interactions work. "Via ag extension agents in each county, via region ag ext[ension] agronomist and economists, via State level ag extension agronomists and economists."(G1) with moderate accountability. With high accountability collaboration is "Producer Education including Beef Quality Assurance and Beef 706 programs. For consumer outreach, we partner

with the Food & Consumer Science (new title change but can't remember) on Dinner Tonight, have conducted train the trainers for culinary demos, the nutrition component of Pasture to Plate and will extend the MyPlate program."(C1) Collaboration is via "Beef quality audits, animal handling and welfare audits. Also environmental sampling with AgriLife research at Amarillo" with moderate accountability.(F1) These are specific programs cited within Extension and their associated interactions.

Indicating moderate accountability, "We sponsor events and other activities."(AL1) "We provide funding for crop demonstrations, producer meetings, and provide support for Extension activities any way we can including lobbying the state legislature."(C4) With low accountability the participant's organization "promotes programs like 'Master Marketer' to our membership base. Financial support is provided to assist with meals during crop production meetings, field days, etc… Extension personnel are sometimes brought in to speak to the board / management team as a means of updating AgTexas on industry trends."(AL2) With high accountability "Texas Wheat collaborates with Extension by providing funding for extension research projects to help educate our producers. We also attend many educational meetings and work with the various Texas A&M AgriLife leadership."(C6) Multiple groups indicated providing levels of funding to Extension as a means of interaction.

Resources and Barriers

As funding, among other things, can be a limiting factor participants were asked "If resources were no barrier, how could Extension better serve your organization?" A goal of the question was to try and identify opportunities for partnership and collaboration.

"Resources will always be a barrier…As dollars continue to get tighter, the long term impact of less production and beef related research will suffer."(C1) Does this indicate that the

fault of a missed or failed partnership with Extension deserves part or equal blame on the industry partner as well as Extension? This commodity group previously stated their collaborations with Extension have been very successful.

An industry perspective is "[c]ollaborate to help industry adapt and adopt new innovations. Collaborate with industry to develop value propositions. Basic technology development. Partner to develop tools that help producers and veterinarians continuously improve their business knowledge and best practices."(AH) These are broad suggestions, but positively identified opportunities.

"Provide even more resources to our producer costumers as we partner with producers. Give them even more tools to succeed and provide even more research and market access improvement."(G1) This organization works with both Extension and producers, which provides a valuable perspective. The participant has the producers' interest in mind as to how Extension can better serve them more directly. A similar answer, from an industry perspective, describes additional opportunities from an understanding of some existing practices already in place. "We believe there are multiple opportunities to interact with the lab at the extension facility through deeper integration with the animal health technology at our feed yard costumers for data and analysis movement."(FD) Here again is a theme of helping both producers and their own interests. "Texas Wheat is very satisfied with the work Extension has done in the past and is doing now, but would like for the Extension to do an even better job of educating producers in the future by adding more extension specialists and county agents in areas that they are needed."(C6) The commodity groups hit on common themes of increasing Extension's reach and impact.

"Provide better salaries for extension personnel so there is less turnover."(C4) This is related to a similar sentiment amongst the commodity groups. The research indicates they want "more" from Extension whether it be specific programming, personnel, access or information. "There needs to be a leader in Extension to be able to develop programming to better serve both segments of our industry. Our smaller producers do not have a source to reach out to. Our large farms, while independent in many regards, could be provided assistance with the problem of a sustainable labor force. Extension can also do better to protect our producers' freedom to operate by communicating with the public more, educating and continuing a positive dialogue."(C5). This commodity group shares sentiments brought up by the others, however it also brings up the importance of educating the public. Extension, with their associated land-grant university, works to produce unbiased research and serve the citizens of the state (Birkhaeuser, Evenson & Feder, 1991). That is a tremendous opportunity to secure important partnerships and identify additional opportunities.

Extension is a vast organization in both size and scope. "Extension could better serve our organization by better coordinating amongst themselves within Extension. With such a large, geographically dispersed organization it is hard to coordinate activities, which sometimes causes confusion."(AL1) The participant's answer provides insight into an opportunity that has little to no barrier. The opportunity to coordinate and communicate internally could benefit outside partners. "Faster access or less scheduling issues" is also a barrier that has limited impact on funding.(F1) Related to intellectual capital "Educate ag producers on what determines healthy underwriting standards, with special emphasis on the need to maintain health[y] levels of liquidity in their operations to avoid over leverage."(AL2) Is Extension coordinating internally

to maximize external opportunities? The good news in this answer is that there are limited resources needed aside from time, communication and coordination.

"It appears that many producers are on a race to the bottom of the well which will collapse most forms of livestock production in the south plains. Optimization of forage production/water available is going to need to be better understood by the producer and the forage consumer."(F2) The problem and suggestion in this answer is specific, however, it again hits on a similar theme. Extension has personnel dedicated to livestock, forage and water related programming.

Industry Perspective to Partner

After asking how Extension could better serve participants the follow up question asks "What steps should Extension take to start or improve collaboration with your organization?" This is an important opportunity to gain insight from these industries in production agriculture. "Collaboration is a two way street and it's important to understand we all bring specific expertise to the table…probably the biggest step is not to take each other for granted."(C1) Several of the commodity groups indicated they are content with their collaboration with Extension. Another indicated they would like "more cooperation in sharing dates of activities. Many times we either don't get notified or the notifications come so late it is impractical to sponsor or participate."(C2) Texas Pork Producers, who were open in their frustration of Extension not having a swine specialist, offered to help with new swine related programming.

"Direct strategic discussions are best way to collaboration. First time someone has reached out to discuss."(F2) Here the research indicates no one has asked what steps should be taken to collaborate with Extension and their industry. The participant previously indicated they partner with Extension on feed trials, with no further detail. Perhaps the coordination is not clear

to industry as to what role Extension plays in these trials. Conversely, perhaps Extension is not following through on their end to explain their role in the trials. "A larger portfolio of research topics to include everything from animal health to antibiotic resistance."(F1) A similar summation states "both organizations need a better understanding of what each respective group does and then a conversation how we might collaborate."(FD) The trend continues by indication Extension should reach out "more often to know all of us better to collaborate more. Focus on building better relationships."(G1) The data indicates that industry would like Extension to reach out to identify opportunities to collaborate, to gain a better understanding of what each other offers and to develop working relationships. "Better internal collaboration within Extension would help for better collaboration with outside organizations and more effective efforts to educate and improve agriculture."(AL1) After increased interaction with industry to understand trends "Extension could then work to educate producers in the areas needed to improve their operations / loans."(AL2)

"They need a whole new program and approach to modern day Ag! Quit hiring all the family and consumer life agents and shift their focus back to agriculture and doing meaningful research that will make a difference to our bottom line. A rancher's job is to produce the world's best, safest, most wholesome supply of protein in the world to help feed a growing population. A&M Extension should be helping us lead the way! The ranchers are doing their part."(R1) Obviously this is a strong statement from a producer, however that does not mean it should be ignored.

The research provides some tangible next steps toward collaboration. The commodity groups, for the most part, are content with their existing partnerships with Extension and add

only a few caveats to be aware of. However, industries within production agriculture require additional information and understanding before starting or increasing collaborative partnerships.

Industry Expertise

Production agricultural industries have specialties or expertise. The participants were asked "Do you believe your organization could provide expertise to Extension to consider or implement for external engagement?" Seven answered "Yes" and seven answered "I am not sure" while one did not answer. Of note, not one participant answered "No." This question aims to understand if Extension can learn from these industries. The follow up question asks "How would you suggest Extension, in general, start or improve partnerships with organizations such as yours?" A poignant answer stated "It needs to be driven from Extension. I know that sounds terrible from industries part. Industry gets caught up in day to day activities and loses sight of what needs to be done to make agriculture better for the next generation. Local Extension being pleasantly persistent will engage participation."(F2). "I have never been asked from Extension how they can help me or what I need from them to better my business. Hire competent knowledgeable agents that bring some experience and work ethic to the table"(R1) These answers have a similar theme in that Extension needs to be doing the asking both what they can learn from industry and how they can better serve them in order to collaborate.

"Reach out with a specific objective in mind."(AL2) A similar tone states "Extension can seek out the decision makers in our organization to build upon current relationships. Extension can provide more in-depth training for Attebury employees which would complement our internal Attebury training program. Extension can seek out our expertise and leadership on additional research projects to explore."(G1) Again, these answers have a homogenous tone regarding Extension's efforts to reach industry.

"Better organization and coordinate internally so they are better coordinated and organized when working with outside organizations."(AL1) Here the answer reaches back to earlier inputs about Extension's internal efforts could positively impact external partnerships. "I would prefer a dialogue to flesh this out – however, general categories of partnership include industry needs, data, domain expertise, best practices to providing solutions."(AH) Addressing industry needs and expertise arises again. The in-roads to industry may be challenging at times, however, industry desires to engage Extension.

The commodity groups tend to have corresponding themes amongst themselves though differ from industry at times. "I am pleased with the engagement level we have now."(C4) "We have been very fortunate to have a great relationship with our long standing dairy specialist. We hope to continue this with the new dairy specialist that was just hired."(C3) Current engagement is good with these two organizations. Another previously mentioned theme arises from multiple commodity groups. "Reach out and follow through."(C5) "More communication and involvement with us before rolling out programs."(C2) And simply put "Take the time to meet with each other."(C1) Once again a baseline of communication arises in the research. The common ground found in both the industry participants and commodity participants points out the need for Extension to follow through. A cycle of engagement, planning, execution and accomplishment must have constant communication throughout in order to continue a cycle of collaboration between Extension and production agriculture.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Aim and Problem

The aim of this study is to understand production agriculture success and failures related to partnerships with Extension in order to determine appropriate avenues for mutually beneficial relationships. The problem is identifying what is considered a successful or failed partnership between production agriculture and Extension.

The Bad

My research shows there is a lack of understanding and information between Extension and industries within production agriculture. From the wide array of production agriculture industries represented by these respondents and their answers it is also clear Extension personnel are not considered subject matter experts. When industry looks to outside organizations for collaboration or input, Extension is not at the top of the list if they are on the list at all. Extension's role to share information, increase technological adoption rates and impact production agriculture is not reaching all audiences. The many different services and program areas that Extension provides are not reaching potential partners in the agricultural production industry.

My research indicates there are multiple problems that contribute to the disconnect between Extension and production agriculture such as a lack expertise, not establishing a relationship and failure to disseminate useful information. Given a respondent answer that "[w]e now have uninformed, untrained, uneducated agents in our counties who are clueless about Ag and provide no benefit" it seems as though Extension employees are failing to connect or communicate with industry. Industry makes it clear that Extension must initiate communication

in order to establish relationships. Additionally, Extension seems to be failing to inform organizations in production agriculture ways in which they can help them. One CEO states his industry has little to no interaction with Extension. The first two problems, lack of communication and relationships, are contributing to the third problem of industry being unaware of what Extension can offer them.

The terms 'University' and 'Extension' are intermingled by respondents. Here the indication is that Extension's role is not clearly identified in a partnership or collaboration. Additionally, industry indicated production agriculture chooses to go beyond universities with Extension while collaborating on agriculture related projects. Industry does not have a clear understanding, at times, as to what Extension contributes to collaborations. While this may not always be the fault of Extension, it must be considered as a possible failure on Extension's part. Considering several industries had a limited, or negative, perception of Extension this could explain why they chose to partner with organizations that provide similar work to Extension.

Given the vast range of outside partners industry relies on, such as non-land grant universities and NGO's, it appears Extension is missing opportunities for collaboration. Many of the NGO's listed deliver the same, or nearly the same, type of services that Extension offers such as conservation practices, land management, community development, financial management and so on (Velez et al, 2014). Extension should be concerned about industry turning to outside organizations that perform similar work as it could render them obsolete. This may, however, simply be a failure to inform industry about how Extension can serve as a partner. Regardless of the reason, industry is unaware of all that Extension has to offer that appears to be a failure on the part of Extension.

The commodity group research indicates a concern about Extension's ability to hire and retain educated and experienced personnel. Additionally, there are concerns about not having subject matter experts or specialists related to certain commodities. Serving production agriculture is a concern as well given the expanse of Extension's increased efforts in Family and Community Health. While an argument could likely be made that hiring family and community health agents does not take away from hiring ag agents, there is a concern with this participant that Extension is getting away from supporting production agriculture. Regarding resources, a commodity group was quick to point out resources will always be limited. The answer is realistic but is also restrictive. There is only negative forecasting in this answer, opportunity is not identified. When a specific concern was described by a respondent regarding beef production it hits home to Texas A&M University and Texas A&M AgriLife Extension because there are beef production personnel employed by both the university and Extension. It is unlikely the concerns mentioned are unknown to those personnel. If these problems are not known, or even if they are, this again points to opportunity for Extension to serve production agriculture.

The Good

Industry clearly has some disconnect as to what Extension is doing or is doing that could serve them. The failures described by one of the participants points out problems therefore perhaps there are solutions they could identify. Successful partnerships and collaborations are indeed taking place between Extension and production agriculture. The commodity groups, in particular, and certain sectors of industry are working together. Additionally, my research indicates those existing collaborations are successful. While positive partnerships do exist, as said by respondents, the production agricultural industry needs more of it to benefit producers.

The regard for Extension is relatively high amongst these partners as well. Commodity groups shared a common theme of praise toward Extension personnel. Anecdotally the tone is somewhat surprising given years of perceived criticism of Extension from commodity groups in the state. Albeit, participants were encouraged to answer honestly. Accountability, however, is scattered from low to high, something to be cautious of when considering outcome driven results. It is interesting that both a feed yard operation and a commodity group listed accountability as high while citing specific interactions with Extension. Earlier indications pointed to a disconnect between some of the industry and their opportunities to partner with Extension.

The concerns listed are, for the most part, relatively easy to correct especially when considering they do not require a significant amount of financial resources. Communicating with production agricultural industries should not be a significant challenge. Coincidentally, increasing communication efforts will likely lead to establishing relationships. The primary resource needed to make this effort is time. A financial resource that industry supports is increased salaries for Extension employees in order to reduce turnover. Industry is asking for information, they are asking for relationships, both of these are ways to inform industry as to how Extension can serve as a valuable partner to them. Extension has programs to accomplish some, or all, of services needed to aid industries in production agriculture.

There is a clear desire from industry in wanting to collaborate with Extension or, at a minimum, to better understand opportunities to collaborate based on my research. Respondents were excited to be asked how Extension can help their organization. Additionally, industry expressed they have something to offer Extension though they were not always sure how to proceed. Literature points out opportunities for the reverse flow information from industry to

Extension (Birkhaeuser, Evenson & Feder, 1991). Here again is an obstacle that should be relatively easy to overcome by establishing and maintaining working relationships between Extension and industry. Increasing communication and building relationships should lead to new opportunities to collaborate across multiple program areas of Extension and production agriculture. A simple yet remarkable point was stated by industry that is a valid perspective for both Extension and industry, do not take each other for granted.

My research points out specific failures in their collaborations with Extension. While this could be deemed a negative, it points to specific examples of what did not work. Therefore, clearly defined failures can prove to be valuable lessons for Extension. Tangible results, good or bad, and specific feedback are crucial pieces of information from industry. Feedback does not have to be positive to be effective. Extension should welcome constructive feedback in collaborations with industry.

The Opportunity

A lack of familiarity between industry and Extension is a recurrent theme in my research. Extension has to work to engage industry and be persistent in doing so, according to my research. In order to determine a successful partnership with production agriculture, Extension must coordinate with their external partners prior to launching a collaborative effort. Extension needs to head into a partnership having defined roles, responsibilities, challenges and potential outcomes. Extension must look introspectively as to what it aims to accomplish and with whom. Serving production agriculture led to the very creation of Extension and those efforts should not be lost on Extension today. There are positives in current services provided by Extension but it is clear that those in production agriculture want more; more for industry, more for commodity

groups and more for producers. The data indicates industries want to collaborate with Extension and here in lies tremendous opportunity to increase the role, reach and impact of Extension.

Internally, Extension must evaluate operational strengths they wish to continue and then identify ways to maximize their expertise with external partners. There are successful programs within Extension, but they may be unknown by those who would benefit from them. Again the data indicates there is more that Extension could be doing however the resources are likely already in place with personnel who have expertise in specified areas of production agriculture. There are also shortcomings within Extension, some are limited by resources such as funding and some are only self-inflicted. Extension should not ignore neglected areas or missed opportunities. Challenges should be met head on in order to determine what is feasible and what is not. By evaluating what it aims to accomplish, in both existing and needed program areas, Extension can identify new opportunities and specify direction. Again, it should be noted, that some of the problems identified by the research can be overcome by a paradigm shift in operation, not a dramatic need for additional resources. Admittedly, a seismic shift of internal operations and expectations can take a significant amount of time and effort, which are valuable resources. Implementing new training, such as customer relationship management or new business development, for Extension may require new or realigned resources and investment. Extension may be able to find resources with their associated land-grant university such as experts in other colleges or departments. Additionally, literature describes the justification for public funding of Extension through the comprehensive adoption of technology and innovation leading to successful outcomes and results (Bennet, 1996).

Extension employs subject matter experts as well, visible through titles, publications, and in-person programs. Years of leading innovation and technological adoption are evident in

literature (Rogers, 1988). These experts, however, may not be known to industry for reasons such as geographic distance, lack of self-promotion, or a temporarily unfilled position. Additionally, prior criticism of Extension was a focus toward larger organizations and industry, not smaller farm operations that may have led to shift in Extension efforts away from industry in recent decades (Rogers, 1988). There are many variables as to why a subject matter expert or specific program is unknown to an industry. It is likely these issues can be overcome through previously mentioned suggestions; increasing communication and establish working relationships.

Successful collaborations and partnerships between Extension and production agriculture could achieve greater success in the public and private sectors and therefore better serve citizens and customers alike. Adoption of new technology relies on testing by Extension (Rogers, 1988). Extension and industry need each other in order to test and develop new technologies. Clearly defined parameters must be addressed heading into collaborations. Extension must communicate clearly with industry, defining roles and projected outcomes. In addition to the benefits for both Extension and production Ag industries the possibility to educate and reach more citizens, stake holders and legislatures could be a positive long term outcome for Extension and industries in production agriculture.

External vs. Internal

The researcher specifically wanted external feedback of Extension and targeted those in production agriculture. There was no internal survey of Extension personnel. The goal was to further gain an understanding of existing partnerships, or lack thereof, and identify opportunities for Extension to better serve Ag industries. The expectations and metrics of Extension employees, such as county agents, county directors, program leaders and district administrators

were not a part of the research. The recommendations made may be in place, at least in-part, in areas of Extension already. The research points out obvious successes between production agriculture and Extension. The concern remains, however, that a large swath of agricultural industries are unaware of ways in which they could benefit by collaborating with Extension. Likewise, Extension may be unaware of ways they could benefit by securing additional outside partnerships and industry expertise. It is worth noting that the question to define successes and failures was a single question, not two questions as it likely should have been.

Application and Future Research

My research has practical use in that it identifies a disconnect between production agriculture and Extension for both existing and potential partnerships. Extension is not identified or recognized for the work it is performing within production agriculture. By recognizing a problem Extension can look to identify solutions. Extension already works with production agriculture, there are indeed successful examples identified in my research and other literature. However, Extension appears to be failing to educate industries on all of the ways they could provide services or partner.

Where is the break in connection reaching industry with these existing Extension programs? Perhaps the issues of communication and coordination, or lack thereof, address the disconnection. In discussing issues related to cattle shipping, among other challenges in beef production, a participant states "Where is the groundbreaking research that is helping us fix this problem? [Texas] Tech, OSU, CO[lorado State], M[eat] A[nimal] R[esearch] C[enter] in NE[braska] have very good reputations and they are gaining traction all of the time. No one talks about A&M outside of Aggies!"(R1)

Texas A&M AgriLife Extension appears to have somewhat of an identity problem as well when considering Extension is separate agency from Texas A&M University. Future research can continue with external evaluations of production agriculture and their interaction with Extension. Additionally, Extension, specifically Texas A&M AgriLife Extension, could perform internal research for various ways to evaluate operations, communications, effectiveness, reporting and more.

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